

# PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION.

### Improvements in Telephone Receivers.

We, HENRY JOHN WALTER BARNES, of 111, Grove Vale, Dulwich, London, S.E. 22, LAURENCE BARNES TICKLE, of 61, Borough Road, London, S.E. 1, and  
5 HARRY LAUDER RAYNER, of 390A, Uxbridge Road, Shepherds Bush, London, W. 12, British subjects, do hereby declare the nature of this invention to be as follows:—

10 Our invention relates to improvements in receivers particularly for wireless receiving sets and the like, and has for its object to minimise the expense for the receiver by enabling a number of persons  
15 to listen to wireless telephonic or other signals received on a single or double receiver. A further object is to reduce the weight of the parts carried by the listeners and so to relieve them of the  
20 usual cumbersome pair of head phones and strap.

According to this invention we employ a suitable telephone receiver mounted in a base or stand and provided with a cover  
25 or casing having an aperture preferably in the centre thereof, and to which is secured a suitable fitting having any suitable number of branch connections or nipples mounted thereon. An aperture  
30 is provided through each of these connections or nipples and communicates with the aperture in the cover or casing.

To each connection or nipple may be secured a flexible tube of rubber or other  
35 suitable material of the desired length to reach each individual listener. The end of each tube may be forked or branched out into two or more tubes and may be provided with nipples or ear-  
40 pieces substantially similar to the tube and ear-piece commonly employed in connection with ordinary doctors' stethoscopes or alternatively, separate tubes may extend from the instrument to each  
45 ear of the listeners. This forked con-

nection may be made by means of a short tubular Y-piece to which the ends of separate rubber or other flexible tubes are connected. The nipples or ear-pieces are inserted in or over the listener's ears  
50 and the sound will be conveyed from the telephone receiver along each flexible tube to each listener. In this manner very clear and true results can be obtained and any number of persons may  
55 listen to signals from a single or double telephone receiver. This materially reduces the expense as a number of flexible connections will suffice for a number of listeners whereas at present it  
60 is necessary to employ a separate head-phone each having two receivers for each person. By substituting a horn or trumpet for the series of nipples the instrument may be used as a loud  
65 speaker.

In carrying our invention into practice, an ordinary telephone receiver or receivers may be mounted in a suitable carrier or base having a flange  
70 adapted to support it upon a table, and a tubular or other suitably shaped receptacle at its other end into which the telephone receiver fits. Upon the top of the receiver or the casing is a series of  
75 connections or nipples. Suitable lengths of flexible rubber or metallic pipe may be connected to each nipple and near their free ends a hollow tubular Y-shaped connection serves to couple up a pair of  
80 short tubes to the outer ends of which are secured suitable ear-pieces or nipples adapted to engage in the listener's ears. If desired suitably shaped trumpet or  
85 other form ear-pieces may be arranged to engage over the listener's ears instead of the nipples and suitable spring bands or other means may then be employed for retaining them in place over the  
90 listener's ears.

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Our invention may also be constructed as an attachment to be fitted to existing telephone receivers. For this purpose a cover or casing may be arranged to be fitted to the receiver or a disc having the necessary tubular connection may be secured over the diaphragm by the exist-

ing ear cap. Branch nipples may be mounted on this tubular connection and any number of tubes connected thereto.

Dated this 23rd day of June, 1923.

RAYNER & Co.,

5, Chancery Lane, London, W.C. 2,  
Agents for the Applicants.

## COMPLETE SPECIFICATION.

### Improvements in Telephone Receivers.

15 We, HENRY JOHN WALTER BARNES, of 111, Grove Vale, Dulwich, London, S.E. 22, LAURENCE BAINES TICKLE, of 61, Borough Road, London, S.E. 1, and HARRY LAUDER RAYNER, of 396A, 20 Uxbridge Road, Shepherd's Bush, London, W. 12, British subjects, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly 25 described and ascertained in and by the following statement:—

Our invention relates to improvements in telephone receivers and more particularly to wireless telephone receivers, and has for its object to provide an improved device whereby a single telephone receiver can be used simultaneously by a number of listeners.

According to the invention we employ 35 a suitable telephone receiver mounted on a base or stand and provided with any suitable number of branch connections or nipples for connecting to earpieces for individual listeners and with an aperture which is adapted to receive a loud speaker trumpet and is so arranged that the branch connections are closed automatically when the trumpet is inserted in the aperture, a plug or other means being provided for closing the socket 45 when the trumpet is not in use.

To each branch connection may be secured a flexible tube of rubber or other suitable material of the desired length to reach each individual listener. The end of each tube may be forked, or branched out into two or more tubes and may be provided with nipples or ear-pieces substantially similar to the tube and ear-piece commonly employed in connection with ordinary doctor's stethoscopes or alternatively, separate tubes may extend from the instrument to each ear of the listeners. This forked connection may be made by means of a short tubular Y-piece to which the ends of separate rubber or other flexible tubes are connected. The nipples or ear-pieces are inserted in or over the listener's ears and the sound will be conveyed from the telephone receiver along each flexible tube

to each listener. In this manner very clear and true results can be obtained and any number of persons may listen to signals from a single or double telephone receiver. 70

Our invention may also be constructed as an attachment to be fitted to existing telephone receivers. For this purpose a cover or casing may be arranged to be fitted to the receiver or a disc having the necessary tubular connection may be secured over the diaphragm by the existing ear cap. Branch nipples may be mounted on this tubular connection and any number of tubes connected thereto. 80

In order that our invention may be more readily understood, reference is made to the accompanying sheet of drawings, in which:— 85

Fig. 1 is a perspective view of a telephone receiver for use with wireless receiving sets constructed according to our invention.

Fig. 2 is a vertical section through the receiver showing the manner of connecting a number of ear-pieces and coupling tubes, and 90

Fig. 3 is a similar view with the head pieces removed and a socket arranged for a trumpet, so as to act as a loud speaker. 95

Referring to the drawings, the outer casing 1 of the telephone receiver is provided with a flanged base 2 so that it may stand conveniently upon a table or other surface. Within the casing are located the magnets which comprise a pair of L-shaped laminated pole pieces 3 secured upon a ring 4. This ring 4 is supported on coil springs 5 located at opposite sides of the ring and around a pair of screwed studs 6 provided with nuts 7 which engage the upper surface of the ring 4 so that it will be pressed against them by the springs 5. A transverse bar 8 is secured to the undersurface of the ring 4 and is provided at its centre with a downwardly projecting pin 9 which projects through an aperture 10 in the bottom 11 of the casing 1. This pin is screw-threaded at its end and a nut 12 engages thereon. By rotating this nut 12 upon the pin 9, the transverse bar

8 and ring 4 may be drawn downwardly against the action of the springs 5 so as to adjust the magnets relatively to the diaphragm of the receiver. A small screw 14 is secured in the end of the pin 9 so as to limit the extent by which the nut 12 may be adjusted. In a modification the ring 4 may be mounted on a disc which is a sliding fit in the casing 1 and is secured to the pin 9. Suitable means are provided to prevent the disc rotating. A single coil spring arranged round the pin 9 acts to press the magnets toward the diaphragm.

The L-shaped pole pieces 3 are arranged with their inner ends 15 at a suitable distance from the centre of the diaphragm and suitable coils 16 are arranged thereon. The diaphragm 17 is clamped between the upper edge 18 of the casing 1 and a cover plate 19 secured thereto by screws or other suitable means. This cover plate 19 is provided with a central aperture 20 and a series of transverse holes 21 extend through the cover plate from its edge, and lead into the central aperture 20. Each of these holes 21 may act as a socket for the reception of a tubular plug 22 secured upon the end of a hollow tube 23 leading to ear-pieces 24 so as to connect the sound vibrations to the listener's ears substantially in the manner of a stethoscope. The ear-pieces 24 may be adjustably mounted upon the end of a head-band 25 for convenience in supporting them near the user's ears. Any convenient number of such tubular connections and ear-pieces may be employed with a single telephone receiver, and is only limited by the number of holes 21 provided in the cover 19. Any of the holes 21 which are not in use at any particular time may be closed by means of a solid plug 26 and a further solid plug 27 is located in the upper end of the central aperture 20 when the head-pieces 24 are in use.

When it is desired to use our improved receiver as a loud speaker for wireless reception, a tubular socket 28 is engaged in the central aperture 20. The lower end 29 of this tubular socket projects down in the central aperture 20 so as to cover up the inner ends of the transverse holes 21. A sound magnifying trumpet 30 is secured in the other end of this tubular socket 28 so that the sound vibrations from the diaphragm 17 will pass through the tubular socket 29 and the trumpet 30 so as to be emitted therefrom in a magnified form, thus producing a greatly increased volume of sound.

With an arrangement as described above, any convenient number of persons may listen in with one telephone

receiver by employing a series of tubular connections and head-pieces, or alternatively the same instrument may be employed as a loud speaker by mounting the trumpet in the central aperture.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A telephone receiver provided with a cover over the diaphragm provided with a series of branch connections for connecting to earpieces for individual listeners and with an aperture which is adapted to receive a loud speaker trumpet and is so arranged that said branch connections are closed automatically when the trumpet is inserted in said aperture, a plug or other means being provided for closing said socket when said trumpet is not in use.

2. In a telephone receiver according to Claim 1 arranging the cover with a central aperture from which a series of lateral holes extend outwardly and are adapted each to receive a tubular plug upon the end of the tubular connection of the ear-pieces.

3. In a telephone receiver according to Claim 2, arranging the central aperture to extend right through the cover and providing a plug to close its upper end when the head-pieces are in use and a socket adapted to be substituted for this plug and connected to a trumpet, the lower end of this socket being arranged to cover the transverse holes to prevent the transmission of sound therethrough when the loud speaker trumpet is in operation.

4. A telephone receiver according to Claims 1, 2 or 3, in which the diaphragm and magnets are supported in a casing provided with a flanged base so that it may stand conveniently upon a table, and having the cover secured over the diaphragm mounted on its upper end.

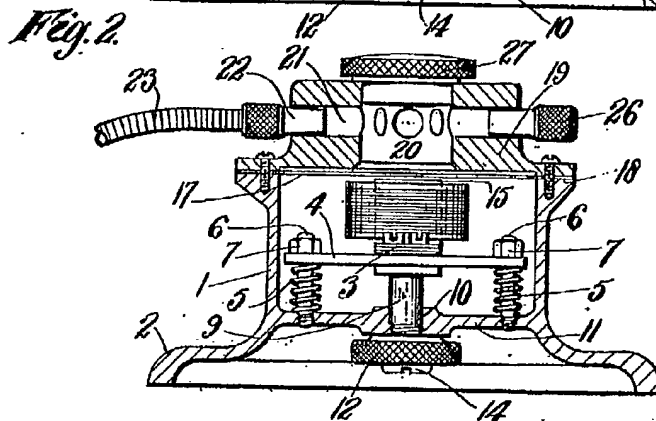
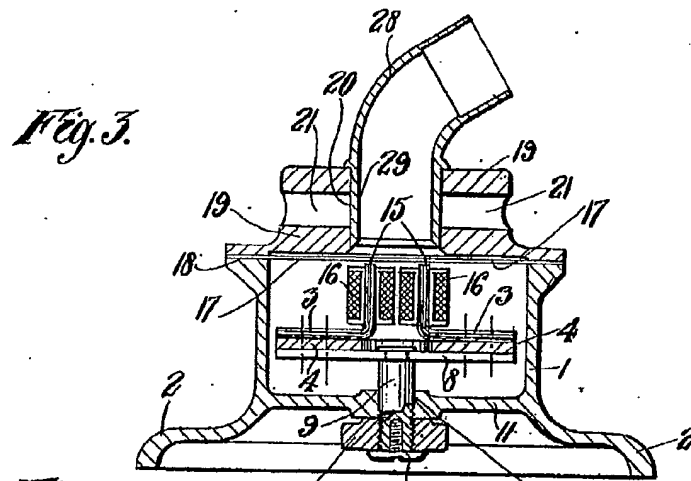
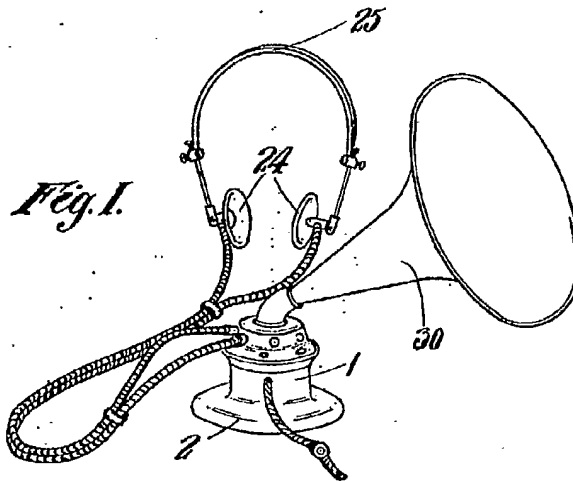
5. In a telephone receiver according to Claim 4 securing the diaphragm between the upper edge of the casing and the cover, and mounting the magnets beneath the diaphragm in such a manner that they may be readily adjustable from outside the casing.

6. The improved telephone receiver particularly for wireless reception substantially as described in the specification with reference to the accompanying sheet of illustrative drawings.

Dated this 11th day of March, 1924.

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[This Drawing is a reproduction of the Original on a reduced scale.]



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